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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,731	01/16/2004	Christopher J. Bond	11669.136USU1	6901

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EXAMINER	
GROSS, CHRISTOPHER M	
ART UNIT	PAPER NUMBER
1639	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/29/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/759,731	BOND, CHRISTOPHER J.	
	Examiner	Art Unit	
	Christopher M. Gross	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) *See Continuation Sheet* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *105-114* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1-7,9-16,18-34,36-40,42,44-46,48-66,68-74,76-85,90-96,98,99 and 102-114.

Continuation of Disposition of Claims: Claims withdrawn from consideration are 1,3-7,9-12,15-16,22-24, 29-34,36-37,38-40,42, 44-46, 48-54, 59-60, 62-66, 68, 69-74,76, 96, 99; 2,18-21, 61,90-91,98; 25-28, 55-58, 77-80,102-104; 81-85, 92-95.

IDS entries:
9/27/2004;12/20/2004;1/31/2005;7/11/2005;8/22/2005

DETAILED ACTION

Claims 1-7,9-16,18-34,36-40,42,44-46,48-66,68-74,76-85,90-96,98-99,102-114 are pending. Claims 1,3-7,9-12,15-16,22-24, 29-34,36-37,38-40,42, 44-46, 48-54, 59-60, 62-66, 68, 69-74,76, 96, 99; 2,18-21, 61,90-91,98; 25-28, 55-58, 77-80,102-104; 81-85, 92-95 are withdrawn. Claims 105-114 are examined herein.

Election/Restrictions

Applicant's election of group I (Claims 1,3-7,9-12,15-16,22-24, 29-34,36-37,38-40,42, 44-46, 48-54, 59-60, 62-66, 68, 69-74,76, 96, 99; 2,18-21, 61,90-91,98; 105-114) and the species: a CDHR3 scaffold set forth in claims 105-114; N terminal sequence RIGR and C terminal sequence WVTW in the reply filed on 11/13/2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1,3-7,9-12,15-16,22-24, 29-34,36-37,38-40,42, 44-46, 48-54, 59-60, 62-66, 68, 69-74,76, 96, 99; 2,18-21, 61,90-91,98; 25-28, 55-58, 77-80,102-104; 81-85, 92-95 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention or species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/13/2006.

Priority

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) is acknowledged. This application claims benefit of provisional applications: 60/441,059 01/16/2003; 60/488,610 07/18/2003 and 60/510,314 10/08/2003.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 105-114 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 105 recites the limitation "the positions" in line 2. There is insufficient antecedent basis for this limitation in the claim. Therefore, claim 105 and all dependent claims are rejected under 35 USC 112, second paragraph.

Claim 108 recites the limitation "the N terminal sequence" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 105 and 106 are rejected under 35 U.S.C. 102(b) as being anticipated by Spinelli et al (2000 Biochemistry 39:1217-1222).

The claimed invention is drawn to a CDRH3 scaffold comprising a N-terminal portion in which some or all of the positions are structural; and a C terminal portion in which some or all of the amino acid positions are structural, and wherein the scaffold can accommodate the insertion of a central portion or loop of contiguous amino acids that car vary in sequence and in length.

Spinelli et al teach, throughout the document and especially the abstract camelid heavy chain variable domains (VHH) comprising a CDRH3 regon which *inherently* posesses a N-terminal portion in which some or all of the positions are structural and a C terminal portion in which some or all of the amino acid positions are structural. Specifically, Spinelli et al disclose in figure 2 the N and C termini of the CDR3 loop are each attached to a beta strand. Said beta strands are structural elements of the immunoglobulin fold.

Spinelli et al teach in figure 1, various CHR3's with different size loops (from 6-26 residues) which reads on a scaffold that can accommodate the insertion of a central portion or loop of contiguous amino acids that car vary in sequence and in length of claim 105.

Spinelli et al teach on page 1219, that H3 loops are sometimes held together by an internal disulfide bridge, which reads on the limitation set forth in claim 106 as well as represents a structural element at both the N and C termini as set forth in claim 105.

Claims 105 and 106 are rejected under 35 U.S.C. 102(b) as being anticipated by Muyldermans et al (2001 TIBS 26:230-235).

Muyldermans et al teach, throughout the document and especially the abstract camelid heavy chain varible domains (VHH) comprising a CDRH3 regon which *inherently* posesses a N-terminal portion in which some or all of the positions are structural and a C terminal portion in which some or all of the amino acid positions are structural. Specifically, Muyldermans et al disclose in figure 3 the N and C termini of the CDR3 loop are each attached to a beta strand. Said beta strands are structural elements of the immunoglobulin fold.

Muyldermans et al teach in figure 1, various CHR3's with different size loops (from 4-26 residues) which reads on a scaffold that can accommodate the insertion of a central portion or loop of contiguous amino acids that car vary in sequence and in length of claim 105.

Muyldermans et al teach on page 232, right column, lines 4-5 that CDR3 loops are sometimes held together by an internal disulfide bridge, which reads on the limitation set forth in claim 106 as well as represents a structural element at both the N and C termini as set forth in claim 105.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 105-114 are rejected under 35 U.S.C. 103(a) as being unpatentable over **La Rosa et al** (US Patent Application 2004/0123343) in view of either of **Spinelli et al** (2000 Biochemistry 39:1217-1222) **or Muyldermans et al** (2001 TIBS 26:230-235).

La Rosa et al teach, throughout the document and especially SEQ ID 14817, a protein comprising the peptide sequence RIGR toward the N terminal and WVTW toward the C terminal (elected species) and is taken to read on claims 107-114. See sequence data available on-line at

http://seqdata.uspto.gov/sequence.html?DocID=20040123343

La Rosa et al do not teach said peptide sequences in the context of CDHR3 domain, however.

Either of **Spinelli et al or Muyldermans et al** teach CDHR3 domains in a camelid VHH antibody

It would have been *prima facie* obvious for one of ordinary skill in the art, at the time the claimed invention was made to insert the RIGR...WVTW peptide sequence of La Rosa et al into the CDHR3 domais of Spinelli et al or Muyldermans et al.

One of ordinary skill in the art would have been motivated to insert the RIGR...WVTW peptide sequence of La Rosa et al into the CDHR3 domais of the VHH's of Spinelli et al or Muyldermans et al. either because they are valuable tools for selecting haptens, as noted by Spinelli et al in the last line of the abstract or else because single-domain antibodies (VHH) are able to be prepared at low cost and represent robust molecular recognition units for affinity adsorbents or in antibody-based protein chips, as noted by Muyldermans et al in the last paragraph on page 234.

One of ordinary skill could insert the RIGR...WVTW peptide sequence of La Rosa et al into the CDHR3 domains of the VHH's of Spinelli et al or Muyldermans et al. with a reasonable expectation of success since the methods required, (i.e. site directed mutagenesis) have been available in the art for some time.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 105-114 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 22 and 48 of copending Application No. 11/102502 in view of Spinelli et al (2000 Biochemistry 39:1217-1222) or Muyldermans et al (2001 TIBS 26:230-235).

The instant claims are drawn to a CDRH3 scaffold comprising a N-terminal portion in which some or all of the positions are structural; and a C terminal portion in which some or all of the amino acid positions are structural, and wherein the scaffold can accommodate the insertion of a central portion or loop of contiguous amino acids that car vary in sequence and in length.

The reference claims are drawn to a varible framework domain (VFR) comprising a variant CDR3 comprising: a) a N terminal portion that comprises at least one structural amino acid position, wherein said structural amino acid position has a variant amino acid that is selected from the group consisting of up to six different amino acids; b) a central portion that comprises at least one nonstructural amino acid position, wherein the nonstructural amino acid position has a variant amino acid that comprises any of the naturally occuring amino acids; and c) a C-terminal portion that comprises at least one structural amino acid position, wherein said structural amino acid position has a variant amino acid that is selected from the group consisting of up to six different amino acids, and wherein the amino acid positions in the CDR3 region form a loop of the antigen binding pocket.

The instant set of claims lack CDR1 the CDR2 loops and other portions of the VFR that are present in claims 22 and 48 of application no. 11/102502.

Both Spinelli et al and Muyldermans et al teach a entire camelid VHH's (VFRs)

One of ordinary skill in the art would have been motivated to expand the CDHR3 domains of the instant application so as to prepare the VHH's of Spinelli et al or Muyldermans et al. either because they are valuable tools for selecting haptens, as

noted by Spinelli et al in the last line of the abstract or else because single-domain antibodies (VHH) are able to be prepared at low cost and represent robust molecular recognition units for affinity adsorbents or in antibody-based protein chips, as noted by Muyldermans et al in the last paragraph on page 234.

This is a provisional obviousness-type double patenting rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Gross whose telephone number is (571)272-4446. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J. Douglas Schultz can be reached on 571 272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher M Gross
Examiner
Art Unit 1639

cg

MARK L. SHIBUYA
PRIMARY EXAMINER